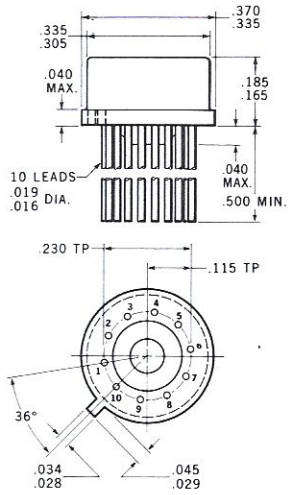
SH3002

SPDT ANALOG SWITCH

FAIRCHILD HYBRID CIRCUITS

- **INPUTS CCSL COMPATIBLE**
- **MW MICROLOGIC® AND MICROLOGIC® COMPATIBLE INPUTS**
- **LOW FEED THROUGH SPIKES ON THE OUTPUT**
- **TYPICAL t_{on} — 120 ns**
- **APPLICATIONS: SERIES SHUNT CHOPPERS, A/D CONVERSION SINGLE POLE DT RELAYS, MULTIPLEXING OR SCANNING**

PHYSICAL DIMENSIONS
(in accordance with JEDEC TO-100)



NOTES:
All dimensions in inches
Leads are gold-plated Kovar
Package weight is 1.02 grams

PART NO. HAG30021XX

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures	
Storage Temperature	−65°C to +150°C
Operating Temperature	−55°C to +125°C
Maximum Power Dissipation	
at 25°C Case	500 mW
at 25°C Ambient	350 mW
Maximum Voltages and Current	
V_{in} (Pins 1, 2, 8 & 9)	±10 V
V_{out} (Pins 3 & 7)	±10 V
V^+ (Pin 10)	+11 V
V^- (Pin 6)	−22 V
I_{in}, I_{out}	100 mA
V_{switch} (Pin 4)	±6 V

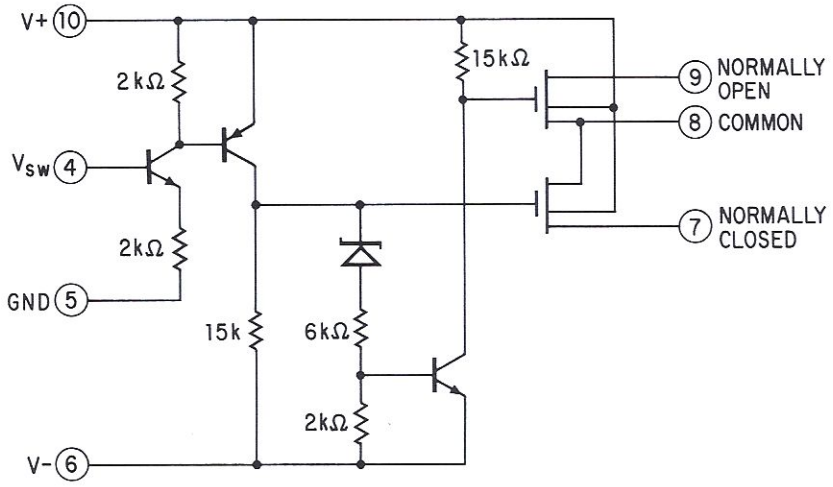


FIG. 1.

FAIRCHILD SEMICONDUCTOR
A DIVISION OF FAIRCHILD CAMERA AND INSTRUMENT CORPORATION
313 FAIRCHILD DRIVE, MOUNTAIN VIEW, CALIFORNIA, (415) 962-5011, TWX: 910-379-6435

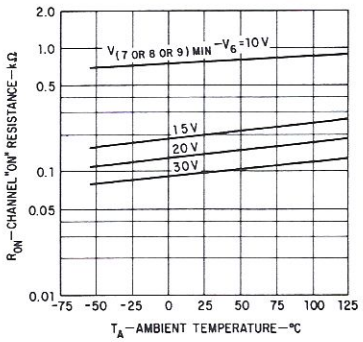
COPYRIGHT FAIRCHILD SEMICONDUCTOR 1967 • PRINTED IN U.S.A. 3435-287-87 30M
MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U. S. PATENTS: 2981877, 3015048, 3025589, 3064167, 3108359, 3117260; OTHER PATENTS PENDING.

ELECTRICAL CHARACTERISTICS ($T_A = 25°C$, $V^+ = 10\ V$, $V^- = -20\ V$ unless otherwise specified)

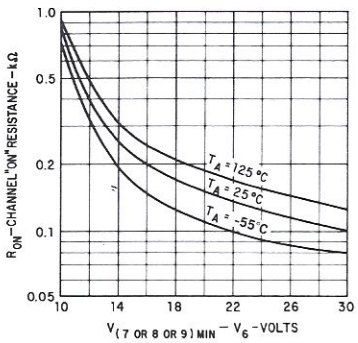
SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
V_{SWH}	High Switch Drive Voltage	2.5			V	$T_A = 25°C$, $T_A = 125°C$
V_{SWH}	High Switch Drive Voltage	2.6			V	$T_A = -55°C$
V_{SWL}	Low Switch Drive Voltage			0.8	V	$T_A = 125°C$
V_{SWL}	Low Switch Drive Voltage			1.1	V	$T_A = -55°C$, $T_A = 25°C$
$R_{ON}/_{channel}$	Channel "ON" Resistance		140	200	Ω	$I_{common} = 1.0\ mA$ V_7 or $V_9 = 0.0\ V$
I_{OFF}	Channel "OFF" Leakage Current			1.0	nA	$T_A = 25°C$
I_{OFF}	Channel "OFF" Leakage Current			1.0	μA	$T_A = 125°C$
V_{IN}	Analog Peak Signal Input			±10	V	$I_{CHNL} = 0$, $T_A = -55°C$ to $+125°C$
I_{10}	Positive Supply Current			8.0	mA	$V_{SWH} = 4.0\ V$, $T_A = -55°C$ to $+125°C$
C_{IN}/C_{HWL}	Channel Input Capacitance		3.5		pF	Channel Off, V_7 or $V_9 = 0.0\ V$
C_{OUT}	Channel Output Capacitance		5.0		pF	Channel Off, V_7 or $V_9 = 0.0\ V$
t_{on+}	Switch Turn-on Time (Pin 9)		120	150	ns	See Figures 2 and 3
t_{off+}	Switch Turn-off Time (Pin 7)		430	500	ns	See Figures 2 and 3
t_{on-}	Switch Turn-on Time (Pin 9)		130	160	ns	See Figures 2 and 4
t_{off-}	Switch Turn-off Time (Pin 7)		300	340	ns	See Figures 2 and 4
t_{off+}	Switch Turn-off Time (Pin 9)		1.6	1.9	μs	See Figures 2 and 3
t_{on+}	Switch Turn-on Time (Pin 7)		1.35	2.0	μs	See Figures 2 and 3
t_{off-}	Switch Turn-off Time (Pin 9)		1.5	1.7	μs	See Figures 2 and 4
t_{on-}	Switch Turn-on Time (Pin 7)		1.6	2.5	μs	See Figures 2 and 4

TYPICAL ELECTRICAL CHARACTERISTICS

CHANNEL "ON" RESISTANCE VERSUS TEMPERATURE



CHANNEL "ON" RESISTANCE VERSUS $V_{(7\ or\ 8\ or\ 9)}$ MIN MINUS V_6



SWITCHING TEST CIRCUIT

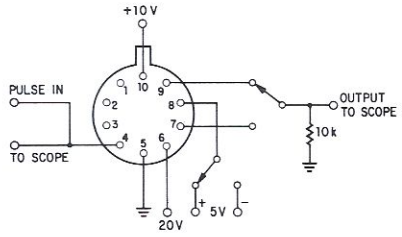
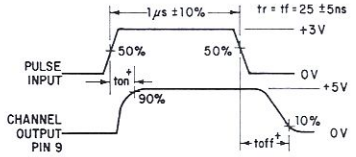


Fig. 2.



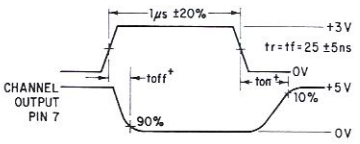
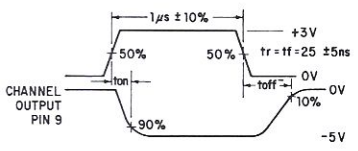


Fig. 3.



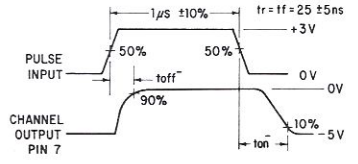


Fig. 4.

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